UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,103	02/04/2005	Jean Beguinot	Q83621	9952

23373 7590 06/04/2009

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
YANG, JIE	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
06/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/509,103
Filing Date: February 04, 2005
Appellant(s): BEGUINOT, JEAN

Bruce E. Kramer
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/16/2009 appealing from the Office action mailed 10/14/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

JP 8-165542	Ichikawa Jiro	6-1996
5,714,116	Jean Beguinot et al	2-1998
5,458,704	Bobbert et al	10-1995
6,048,491	Lars-Ake Norstrom et al	4-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Claims 1-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa Jiro (JP 8-165542, thereafter JP'542, based on English translation) in view of Jean Beguinot et al (US 5,714,116, thereafter US'116) and Bobbert et al (US 5,458,704, thereafter US'704).

Regarding claims 1-10, and 12-15, JP'542 teaches a steel with excellent weldability and hardenability for plastic molding application (Abstract). The composition comparison between the instant claims and JP'542 is listed in following table. The composition ranges of JP'542's alloy overlap those recited by the claims 1-10. The overlapping encompasses most of the ranges

of claimed alloy. JP'542 teaches the hardness of the steel can be up to 460 HB (abstract and table 1), which is within the claimed hardness range (430HB to 530HB). But JP'542 does not explicitly state that a) the metal-working parts having a thickness of greater than 20 mm, of which the structure is completely martensitic or martensito-barnitic; b) Si: less than 0.15%wt (claim 1); no more than 0.13%wt (claim 12); no more than 0.12%wt (claim 13); no more than 0.1%wt (claim 14); or no more than 0.05%wt (claim 15).

Element	From instant Claims (in wt%)	JP'542 claims (in wt%)	Overlapping range (in wt%)
C	0.18-0.4	0.1-0.25	0.1-0.25
Si	less than 0.15 (cl. 1-11); No more than 0.13 (Cl.12); No more than 0.12 (Cl.13); No more than 0.1 (Cl.14); No more than 0.05 (Cl.15)	0.25-0.35; 0-1 (US'116:); 0.05-0.75 (US'704)	--
Mn	No more than 2.5	1.2-2.2	1.2-2.2
Ni	No more than 3	No more than 2	0-2
Cr	No more than 3.5	1.6-3	1.6-3
Mo+W/2	No more than 2.8	Mo:0.03-2	0.03-2
V+Nb/2+Ta/4	No more than 0.5	V:0.01-0.4	0.01-0.4
Al	No more than 0.4	--	
Ti+Zr/2	No more than 0.1	0.003-0.2	0.003-0.1
B	0.0005-0.015	No more than 0.002	0.0005-0.002
S+ Se +Te (optional)	No more than 0.2	Te:0.01-0.15	0.01-0.15
Pb + Bi (optional)	No more than 0.2	Pb:0.03-0.2 Bi:0.01-0.2	0.01-0.2
Ca (optional)	No more than 0.1	0.0005-0.01	0.0005-0.01
Fe +impurities	Balance	Balance	Balance

Regarding the limitation a), US‘116 teaches steels for the manufacture of components having high abrasion resistance for mold application (abstract and Col. 5, Line 29 to 58 of US‘116). US‘116 teaches the steel sheet having a thickness of between 10mm to 100mm (Claims 5, 11, and Col. 4, line 33-38 of US‘116). The structure of steel can be adjusted by heat treatments from mixture of martensite and bainite and 5% to 15% of retained carbon-rich austenite (Col.3, Line 55 to 67 of US‘116) to an entirely martensitic structure (Col. 5, Line 14 to 17 of US‘116). US‘116 teaches the alloy with the major composition overlapping the composition as recited in the instant invention (claims 1-14, tables, and summary of invention of US‘116), and US’116 also teaches the similar hardness range (Tables and claims 8 and 14 of US‘116) and the same mold applications (Col. 5, Line 29 to 58 of US‘116) as recited in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to treat the JP’542’s alloy with a thickness of greater than 20 mm, of which the structure is completely martensitic or martensito-barnitic as recited in the instant claim as demonstrated in US‘116 in order to manufacture the steel articles and components having high abrasion resistance (Abstract of US’116). Regarding

thelimitation b), US'116 teaches adding Si in the range of 0-1wt% in the alloy (claims 1, 8, and 9 of US'116), which overlaps the Si range as recited in the instant claims 1 and 12-15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the amount Si as taught by US'116 in the alloy of JP'542 because US'116 teaches when less than or equal to 1 wt% Si, the steel is easier to smelt and its toughness does not deteriorate. (Col.3, lines 12-14 of US'116).

Still regarding the limitation b), US'704 teaches a steel block with composition (Abstract, table 1, claim 1 of US'704) overlapping with the composition of steel as recited in the instant claims. US'704 teaches more specifically adding Si from 0.05 to 0.75%wt in the alloy (Abstract and claim 1 of US'491). The Si composition ranges disclosed in US'704 overlap with the composition range recited in the instant claims. Refer to **MPEP 2144.05 I**, the prima facie obviousness is rendered. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Si composition, for instance less 0.15%wt as recited in the instant claim 1-10; no more than 0.13%wt as recited in claim 12; no more than 0.12%wt as recited in claim 13; no more than 0.1%wt as recited in claim 14; or no more than 0.05%wt as recited in claim 15 as demonstrated in

US'704 in the alloy of JP'542 in view of US'116 as taught by US'704 because US'704 teaches the product made by such an alloy has a combination of considerable hardness (above 400HB, more particularly above 430HB) with considerable plate thickness (above 50 mm or 75 mm).

Regarding the equations in claim 1-10, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the equations fully depends on alloy's composition; the selection of the proportions of elements, C, Mn, Ni, Cr, Mo, Si, V, W, Nb, Ta, B, Ti, Zr, Al, and N for the calculating factors, Tr, Dr, U, K, K1, I, I*, J, and R would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'542, in view of US'116 and US'704, and further in view of Lars-Ake et al (US 6,048,491, thereafter US'491).

Regarding claim 11, which depends on claim 1, JP'542 in view US'116 and US'704 does not explicitly state that at least a portion of the surface is hardened by nitriding and of which the hardness at all points is between 430HB and 530HB. US'491 teaches a steel alloy using for manufacturing of plastic moulding tools (Technical field). "The steel after finished hot working and cooling to room temperature obtains a homogeneous structure through whole piece of steel independent of its physical dimension, said structure consisting of a so called low carbon lath martensite…" (Col.1, Line 65 to Col.2, Line 18 of US'491). US'491 teaches the surface hardenability by various surface nitriding techniques: Gas nitriding—510°C; Plasma nitriding--480°C; Nitrocarburizing in gas--580°C; and Nitrocarburizing in salt bath (Tenifer)-- 580°C (Col. 6, Lines 9-45 of US'491). Instant invention does not disclose details for gaseous nitriding process, however it points out: "Finally, (steel) they are tempered at a temperature higher than 500°C, and preferably of at least 550°C, but lower than AC1." (Page 14, line 10 to 20). It is noted that instant invention's tempered-temperature is higher than US'491's gas nitriding temperature—510°C, and the hardness of the steel mainly decides by the tempered process. Compared with instant invention, US'491 has an overlapping composition (abstract, Table 1, claims 1-8 of

US‘491), US’491 teaches the similar structure (Col. 1, Line 65 to Col. 2, Line 18 of US‘491) and the similar applications (Technique field, and Background of the invention, Line 10 to 39 of US‘491) as recited in the instant application. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen a suitable gaseous nitriding process in the process of JP542 in view US’116 and US’704 as taught by US‘491 in order to improve surface micro-hardness and get good surface hardenability and maintain 430 to 530HB body hardness (Col. 6, Line 10 to 45 of US‘491).

(10) Response to Argument

Appellant's arguments filed on 3/16/2009 with respect to claims 1-15 have been fully considered but they are not persuasive.

Appellant's arguments are summarized as follows:

1, The differences between the steel of present invention and the steel of JP 8-165542 are: A) Si less than 0.15 in the present invention in order to improve the thermal conductivity but Si is from 0.2 to 0.25wt% in JP’524; B) Boron is necessary in the present invention but boron is considered as harmful in JP’542; and C) The hardness is between 430 to 530 at all points but the hardness is less than 460HB by the side of the base material of weld junction.

2, Regarding US'116, this document describes an abrasion resistant steel not a steel for moulds. US'116 teaches Si+Al≥0.6% and Al≤0.2%. It results Si greater than 0.4% which is not compatible with the limit of less than 0.15wt% Si in the present invention.

3, Regarding US'704, this document relates to steel for armor, which is very different from the steel for moulds. There is no reason to limit the silicon content.

4, There is no reason in the documents to make the combination. More specifically, in the citied documents, there is no information about the effect of silicon on thermal conductivity, nor on the necessity of increasing this property. There is no reason why one skilled in the art would arrive at the silicon content of the present invention. Rather, the Examiner must rely on improper hindsight to selectively pick and choose disclosures from various references to support this position

5, Further, US'491 does not make up for all the deficiencies of JP'542, US'116, and US'704.

In response:

Regarding the arguments 1-5, the Appellant's arguments are against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, JP'542 in view of US'116 and US'704 is applied to the claims 1-10 and 12-15, and JP'542 in view US'116 and US'704,

and further in view of US‘491 teaches the limitations of instant claim 11. The motivations for combining these references can refer to the rejections for claims 1-15 above. The Examiner notes that JP’542 teaches that B is not more than 0.002 wt%, which overlaps the claimed B range of 0.0005 to 0.01wt%. The Examiner further notes that JP’542 teaches controlling the BH by preheating and post heating to obtain the desired hardness (HB 460 or less) (Paragraph [0026] of JP’542), which overlaps the hardness range of 430HB to 530HB as recited in the instant claims. It would have been obvious to one of ordinary skill in the art at the time the invention was made to control the preheating and post heating to obtain a desired hardness as demonstrated by JP’542. Regarding the prior arts US’116 and US’704, as discussed in the rejections above, the major alloy composition ranges of US’116 and US’704 overlap the composition ranges as recited in the instant invention. Refer to **MPEP 2144.05 I**, a prima facie obviousness is rendered. AlthoughUS’116 and US’704 do not mention the effect of silicon on thermal conductivity. However, US’116 teaches when less than or equal to 1 wt% Si, the steel is easier to smelt and its toughness does not deteriorate. (Col.3, lines 12-14 of US’116) and US’704 teaches the product made by such an alloy has a combination of considerable hardness (above 400HB, more particularly above 430HB) with considerable plate thickness (above 50 mm or 75 mm), which are good motivations for combining JP'542 with US'116 and US'704. Refer to MPEP 2145 II: “The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious.”

As pointed out in MPEP 2144.05 III: the law is replete with cases in which the showing the difference between the claimed invention and the prior art is some range or other variable within the claims… In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. In re Woodruff, 919 F.2d 1575, 16 USPQ 2d 1934 (Fed. Cir.1990). The Examiner notes that the Appellant has not submitted any thermal conductivity data to support the argument related to: Si less than 0.15wt% in the present invention in order to improve the thermal conductivity. In other word, there is no any evidence to prove less than 0.15wt% Si is critical for the thermal conductivity property of the alloy.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jie Yang/

Jie Yang, Art Unit 1793

Conferees:

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

/Stanley Silverman/

Supervisory Patent Examiner, Art Unit 1793